ASANTÉ

FriendlyNET® Internet Router
FR1000 Series

User's Guide

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FriendlyNET FR1000 Series
Internet Router with Firewall
User's Manual

06-00675-00 Rev. A

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Table of Contents

Quick Tips

1. **How do I configure the router from a web browser?**
   Go to the address **http://192.168.123.254** and use **admin** as the default password.

2. **How can I view or reset my IP address?**
   From *Windows XP,* open a command window and type **ipconfig /all** to see your settings. Use **ipconfig /release** and then **ipconfig/renew** to reset your IP address. From *Windows 98/Me*, use the command **winipcfg**. See Appendix A for more information.

3. **Where can I download the latest firmware for the router?**
   Visit **www.asante.com** and click on **Support.**

Chapter 1. Introduction

The Asanté FriendlyNET Internet router works with your cable or DSL modem to share high-speed Internet services.

- FriendlyNET **FR1004** is a router with an integrated 4-port 10/100 Fast Ethernet switch and firewall with Secure Packet Inspection™ (SPI).
- FriendlyNET **FR1004AL** adds an AeroLAN wireless access point and a parallel (LPT) print server.

To install and configure the router, follow the instructions in the *Quick Start* guide. Use this document will to guide you through the security and more advanced options.
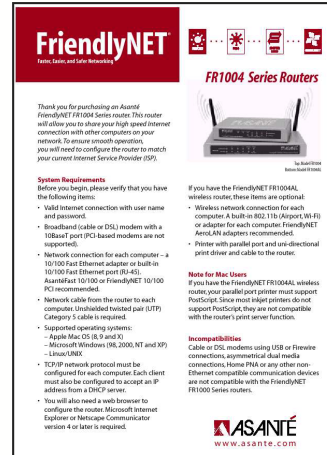
1.1 Hardware Installation

Verify that each of your computers have been connected to the router using appropriate network cables or wireless adapters (FR1004AL only).

1.2 Computer Configuration

Each computer connected to the router should be configured to use the router's dynamic host configuration protocol (DHCP) server.
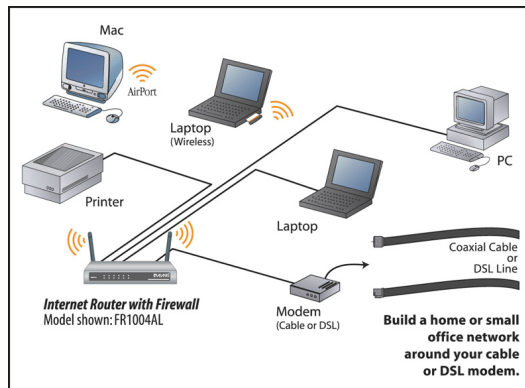
1.3 Basic Router Configuration

The router must be configured to match your Internet service. If you do not know your configuration, please contact your Internet Service Provider (ISP).

By default, the router is pre-configured with these settings:
- Automatically set IP addresses for computers on your LAN. These would include computers *directly* connected to the router's ports 1-4 or *uplinked* through a switch (or hub) that is connected to the router's ports 1-4.

- The router's dynamic host configuration protocol (DHCP) server function will assign IP addresses in the range 192.168.123.100 through 192.168.123.199.
- The router's default IP address is 192.168.123.254.
- The Internet service that is connected to the router's Internet port is connected to an ISP that will supply a dynamic (not fixed) IP address to the router.

To configure the router:
1. Start your web browser and type **http://192.168.123.254** in the location field. Press the **Enter** key.
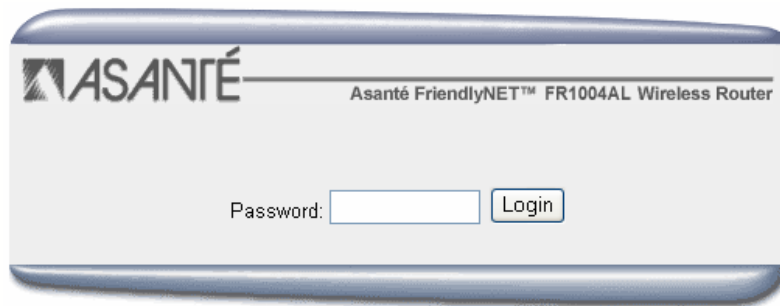2. Login to the router using the default password (**admin**) and clicking the **Login** button.

3. From the top navigation bar, click on the **Setup** button.
4. From the WAN Type screen, select the one that best describes your Internet connection. Click the **Next** button.
5. Fill in any network settings required by your ISP.
6. If you have changed any of the settings, click the **Save** and **Restart Router** buttons.
7. Restart all the computers on your network.
8. To verify your Internet connection, connect to www.asante.com from your browser.

Note: *During normal operation, the router's case may feel warm. The sturdy metal case is designed to radiate heat away from the internal electronic components. This convection-cooled design is preferred over noisier, fan cooled routers.*

The basic configuration of your Asanté router is now complete. The rest of this document provides additional information on security, advanced and wireless settings.

Chapter 2. WAN Types

This chapter details the 8 different Internet or WAN (wide area network) connection types supported by the Asanté router.
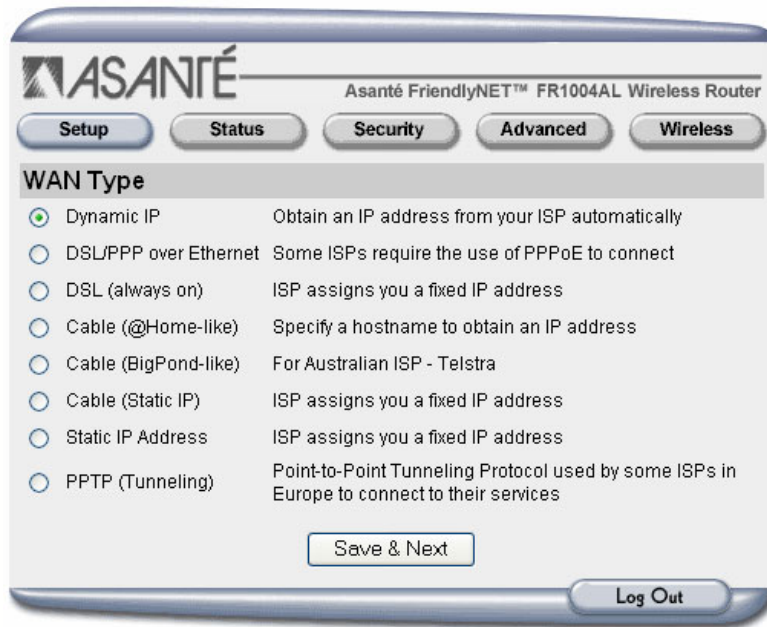
From the top navigation bar, click on the **Advanced** button to access the features described in this chapter.

Note: *This document uses the menus from the FR1004AL wireless router. The menus for the FR1004 wired router are similar (wireless menu is excluded).*

Tip: *Disable all proxy server, firewall, and Internet-sharing software before configuring your WAN type.*

After you have made any changes to the router, be sure to click on the **Save** and **Restart Router** buttons. For security reasons, you should **Log Out** of the router's administration session—even If you have not made any changes.

2.1 Dynamic IP

This is a very popular type of connection for residential and small business customers. Your Internet address settings are furnished dynamically by your ISP.

Characteristics: Cable or DSL modem.

Popular ISPs: Numerous, including Covad TeleSurfer (some plans), Earthlink Cable and AT&T Broadband.

Tip: If you are unsure which WAN type to choose, try this one first.

Auto-reconnect
Since your network settings (including IP address) are only assigned to you on a temporary basis, your ISP may disconnect you after a period of inactivity. Check this box to have the router automatically reconnect your service.

Tip: *If you are planning to host any servers (i.e., HTTP web servers), you should order a static IP address from your ISP and configure the router for the static IP address.*

To save your settings, click on the **Save** and **Restart Router** buttons.

2.2 DSL/PPP Over Ethernet

This is also a very popular choice for residential and small business customers. PPPoE simulates a dial-up session and uses dynamic IP addresses. The account and password items are assigned by your ISP.

Characteristics: ADSL modem which requires special software (IVasion MacPOET/WinPOET, Sympatico Access Manager and NTS EnterNet).

Popular ISPs: Verizon (Online DSL), Bell Atlantic (Infospeed DSL), SBC Pacific Bell (Basic DSL), Ameritech (SpeedPath 768 DSL), SBC (DSL Web Solution), Bell Canada (Sympatico) and Earthlink (Residential DSL)

PPPoE Username and Password
Enter your assigned user name and password.

PPPoE Server Name and IP Address (Optional)
Enter your assigned server name and static IP address, if required.

Authentication
By default, *Auto* will work with most ISPs. Otherwise, you may choose *PAP* or *CHAP*.

Maximum Idle Time and Auto-reconnect
Your ISP may disconnect you after a period of inactivity. Check this box to have the router automatically reconnect your service.

To save your settings, click on the **Save** and **Restart Router** buttons.

2.3 DSL (Always On)

Select this type of connection if your DSL connection to your ISP is always on or "alive."

Characteristics: DSL modem

Popular ISPs: Verizon (Online Business DSL), Pacific Bell/Southwestern Bell (Enhanced DSL, Business DSL) and Telocity

Static IP Setup	
WAN IP Address	0.0.0.0
WAN Subnet Mask	255.255.255.0
WAN Gateway	0.0.0.0
Primary DNS Server	0.0.0.0
Secondary DNS Server	0.0.0.0

Save | Back | Restart Router | Help
Your Router must be restarted for changes to take effect.

WAN IP Address, Subnet Mask, Gateway and DNS
Your ISP should have given you a static IP address, a subnet mask, a gateway (or router) address, and one or more domain name server (DNS) addresses. The subnet mask typically is **255.255.255.0**

Tip: *See the* Quick Start *guide for the settings you recorded from your computer*.

To save your settings, click on the **Save** and **Restart Router** buttons.

2.4 Cable (@Home-like)

This setting is for cable modem services similar to @Home.

Characteristic: Cable modem

Popular ISPs: Not very common after @Home service was terminated, but variations of this service may still be available.

Host Name
Provided by your ISP.

Auto-reconnect
Your ISP may disconnect you after a period of inactivity. Check this box to have the router automatically reconnect your service.
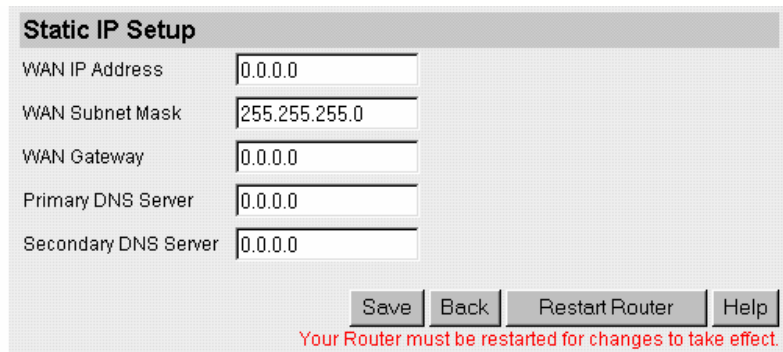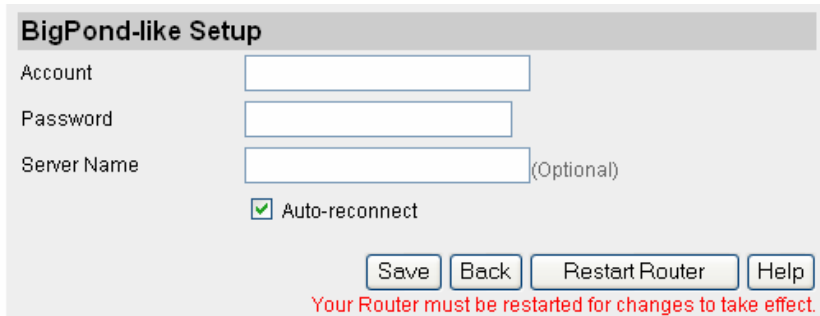
To save your settings, click on the **Save** and **Restart Router** buttons.

2.5 Cable (BigPond)

Characteristic: Cable modem service in Australia.

Popular ISPs: Telstra BigPond

Account and Password
Supplied by your ISP.

Server Name (optional)
Name of your local server, if required.

Auto-reconnect
Your ISP may disconnect you after a period of inactivity. Check this box to have the router automatically reconnect your service.

To save your settings, click on the **Save** and **Restart Router** buttons.

2.6 Cable (Static IP)

Select this type of connection if your cable ISP has given you a static IP address.

Characteristics: Selected cable modem services

Popular ISPs: Optivision and Cox

Static IP Setup

WAN IP Address	0.0.0.0
WAN Subnet Mask	255.255.255.0
WAN Gateway	0.0.0.0
Primary DNS Server	0.0.0.0
Secondary DNS Server	0.0.0.0

Save Back Restart Router Help

Your Router must be restarted for changes to take effect.

WAN IP Address, Subnet Mask, Gateway and DNS
Your ISP should have given you a static IP address, a subnet mask, a gateway (or router) address, and one or more domain name server (DNS) addresses. The subnet mask typically is **255.255.255.0**

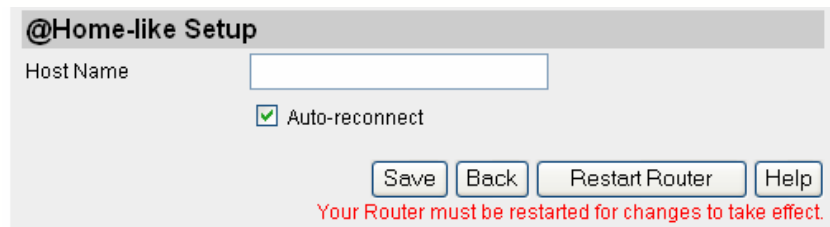**Tip**: *See the* Quick Start *guide for the settings you recorded from your computer.*
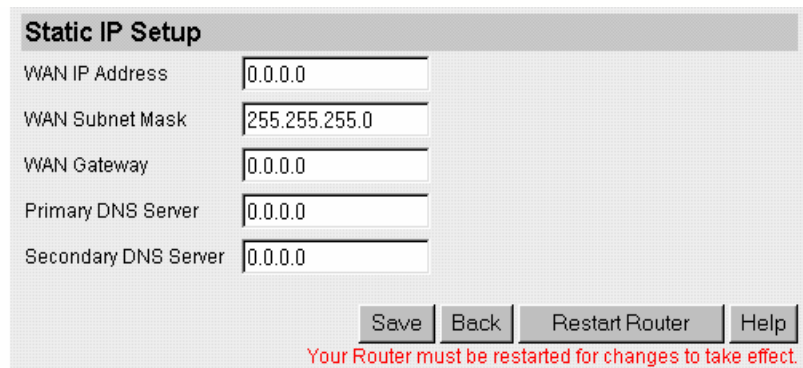
To save your settings, click on the **Save** and **Restart Router** buttons.

2.7 Static IP Address

Select this type of connection if your ISP has given you a static IP address.

Characteristics: Business DSL and selected cable services

Popular ISPs: SBC Yahoo! Standard Plus-S/Deluxe-S/Expert Plus-S and Earthlink (Business SDSL)

Static IP Setup

WAN IP Address	0.0.0.0
WAN Subnet Mask	255.255.255.0
WAN Gateway	0.0.0.0
Primary DNS Server	0.0.0.0
Secondary DNS Server	0.0.0.0

Save   Back   Restart Router   Help

Your Router must be restarted for changes to take effect.

WAN IP Address, Subnet Mask, Gateway and DNS
Your ISP should have given you a static IP address, a subnet mask, a gateway (or router) address, and one or more domain name server (DNS) addresses. The subnet mask typically is **255.255.255.0**

Tip: *See the* Quick Start *guide for the settings you recorded from your computer*.

To save your settings, click on **Save** and **Restart Router** buttons.

2.8 PPTP (Point-to-Point Tunneling Protocol)

PPTP is a special Internet connection that uses a virtual private network (VPN) protocol.

Characteristics: DSL modem service.

PPTP Setup

WAN IP Address	0.0.0.0
WAN Subnet Mask	255.255.255.0
PPTP Server IP Address	0.0.0.0
PPTP Username	
PPTP Password	
Connection ID	(Optional)
Maximum Idle Time	300 Seconds ☑ Auto-reconnect

Save Back Restart Router Help

Your Router must be restarted for changes to take effect.

WAN IP Address, Subnet Mask, Server IP Address, Username and Password
If you have this type of connection, you should have received a username, password, and WAN IP and subnet addresses from your ISP. Enter the information in the appropriate fields of this screen.

Connection ID (optional)
Enter your connection identification number, if required.

Maximum Idle Ti me and Auto-reconnect
Your ISP may disconnect you after a period of inactivity. Check this box to have the router automatically reconnect your service.

To save your settings, click on **Save** and **Restart Router** buttons.

Connecting at Higher Speeds
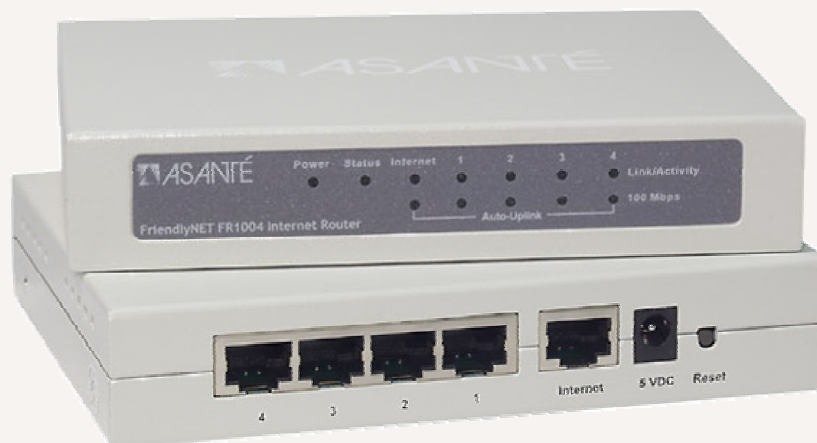
All of the wired network ports—including the Internet (WAN) port—on the router are designed to run at 10 or 100 Mbps. For maximum LAN performance, you should use Asanté or other 10/100 Mbps Fast Ethernet adapters. Although your Internet performance will not change, you will notice a performance difference when sharing files or printers.

Chapter 3. Status

The FriendlyNET router is a very sophisticated networking device with many powerful features. Click on the **Status** button in the top navigation bar to see an overview of its system settings.

Tip: *When you contact Asanté Technical Support (or your Asanté Advantage reseller), you'll want to have the information shown on this screen for ready reference.*

3.1 Router Status

IP Address, Subnet Mask, Gateway and Domain Name Server
This information describes your current Internet (WAN) connection. Your ISP assigns your *subnet mask*, *gateway* and *domain name server* settings. If you use a static address (not dynamic or PPPoE), then these values were entered by you in the Setup > WAN Type screens.

Note: *The router has **two** IP addresses. This is your router's WAN address. The router's LAN address is 192.168.123.254 (factory default); see section 5.1 for details on changing this address.*

Lease Time
Some ISPs provide a single dynamic network (IP) address that is only temporarily assigned to you. The lease time shows when your address is scheduled to expire. Normally, the router will automatically re-connect and renew your address.

If you'd like to "reset" your router's Internet connection, click the **Release** and then the **Renew** button. You lease will be updated. Your IP address may or may not change (depending on your ISP).

Router MAC Address
For security reasons, some ISPs will limit your Internet service only to a single "registered" network adapter. The FriendlyNET router allows you to mimic the registered network adapter by cloning that adapter's hardware (media access control, or simply "MAC") address. Every network device has a MAC address; it's not just for Apple Macintosh computers!

Tip: *If you need to change the router's MAC address, be sure to copy down the address in a safe place. You may need to restore that address in the future.*

To clone a MAC address, connect to the router from the computer with the specified MAC address and click on the **Copy MAC** button. Alternatively, if you are an experienced network user, you may enter your own MAC address and click on the **Save** button.

Firmware Version
This is the version number of the firmware currently installed on the router. Asanté provides free product updates and bug fixes for this FriendlyNET router. From your web browser, visit www.asante.com and click on **Support**. Look for the FriendlyNET FR1004 (wired) or FR1004AL (wireless) firmware.

Note: If new features are added, Asanté may charge an upgrade fee.

Tip: *To upgrade the router's firmware, click on the **Advanced** button (in the top navigation bar). Click on **Upgrade Firmware** and follow the on-screen instructions.*

3.2 Peripheral Status

The FR1004AL wireless router includes an integrated print server. This means you can share a printer, attached to the router's Printer port, with other users on your LAN.

Peripheral Status

Printer   Not ready

[View Log] [View DHCP List] [Restart Router] [Refresh] [Help]

Display Time: Monday, September 16, 2002 6:45:39 PM

[Log Out]
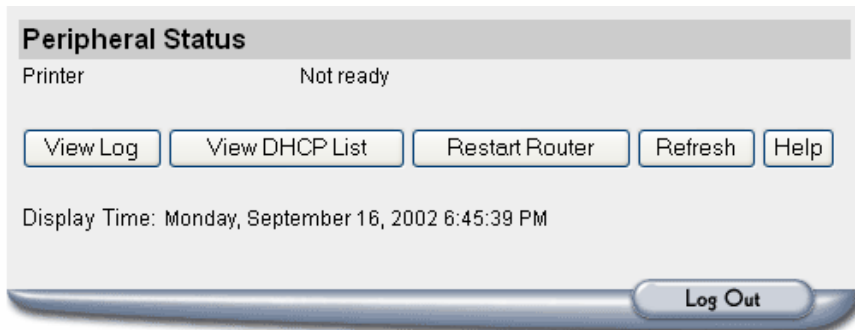
Status messages include:
- *Not ready*. Printer is not connected or it's off-line
- *Ready*: Printer is ready to begin printing
- *Printing*: Printer is now printing. Click the **Cancel** button (when visible) to manually stop the current print job
- *Device error*: Printer is out of paper or ink

3.3 View Log

Click the **View Log** button to view the router's *System Log*. Entries are stamped with the time they were entered in the log. As the log fills up, older entries are automatically deleted.

The router automatically logs these types of events:

INTRUSION DETECTION
- *Unrecognized access*…
  A host on the Internet attempted to connect to a TCP or UDP port on the router. The router blocked the attempt
- *Unallowable access*…
  A user on your LAN tried to access an Internet site and was blocked by the router
- *Restarted*…
  The router was restarted by a computer with a specified IP address
- *…. Login* successful
  A user logged into the router as a system administrator

- *...Login failed*
  Someone tried to login to the router, but the password was not valid
- *...Logged out*
  The system administrator logged out

CONFIGURATION ENTRIES

- ERR: All DNS fail
  The router forwards DNS requests. If no DNS server is found, then this entry is made. Check your DNS setting (Setup > WAN Type)
- ERR: Corrupted coninfo
  The router's configuration information is invalid and you will need to reconfigure the router again

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System Log

WAN Type: Dynamic IP Setup(R1.1)
Display time: Wednesday, September 11, 2002 11:54:25 AM

*DOD:triggered internally
Wednesday, September 11, 2002 9:10:10 AM DHCP:discover()
Wednesday, September 11, 2002 9:10:14 AM DHCP:discover()
Wednesday, September 11, 2002 9:10:22 AM DHCP:discover()

DYNAMIC IP ADDRESS ENTRIES

- *DHCP:discover*
  The router broadcasted a DISCOVER packet to find a DHCP server (or host)
- *DHCP:offer*
  Response from a DHCP sever to acknowledge a DISCOVER request
- *DHCP:request*
  Router's request for a specific IP address
- *DHCP:acknowledge*
  Response from a sever. DOL is the lease time. T1 and T2 are DHCP protocol times
- *DHCP:nak*
  Request for a specific IP address was rejected by the server
- *DHCP:renew*
  Router requests an extension of the lease time
- *DHCP:release*
  Router sends a request to release the specified IP address

PPPoE ENTRIES
These entries begin with the prefix *PPoE, PADO, PADR, PADS,* or *PADT*

PPTP ENTRIES
These entries begin with the prefix *PPTP*

PPP ENTRIES
These entries begin with the prefix PAP_, CHAP_, MSCHAP_, IPCP_

To return to the Status screen, click on the **Back** button.
To update this screen, click on the **Refresh** button.

Tip: *To save or print a copy of the log, select the text and copy it to your word processor or email.* **For Macintosh computers**, *highlight the text in your log and press Command+C. To paste it into your word processor or email, press Command+V.* **For Windows computers**, *highlight the text in your log and press Ctrl+C to copy it to your system clipboard. To paste it into your word processor or email, press Ctrl+V.*

3.4 View DHCP List

DHCP Client List		
IP Address	**Host Name**	**MAC Address**
192.168.123.106	jhsia-ibm	00-00-94-A1-C5-64

Back   Refresh

Click the **View DHCP List** button to see a list of all the computers connected to the router's LAN. The IP address is assigned by the router's DHCP function. The host name is supplied by the user's computer.

Tip: *To change the Host Name in Windows XP, right click on the My Computer icon. Choose Properties > Computer Name. Click the **Change**… button.*
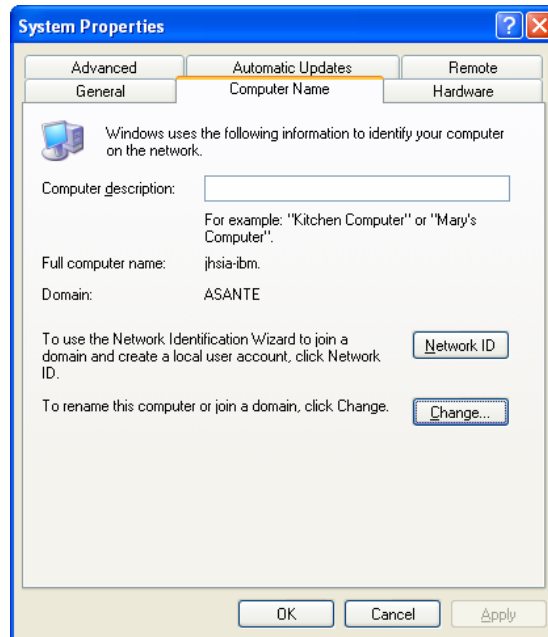
3.5 Other

For your convenience, the bottom of this screen provides buttons to quickly access additional features.

Restart Router
Click this button to reinitialize the router. This is similar to turning the power off and on.

Refresh
Click to update the router's status.
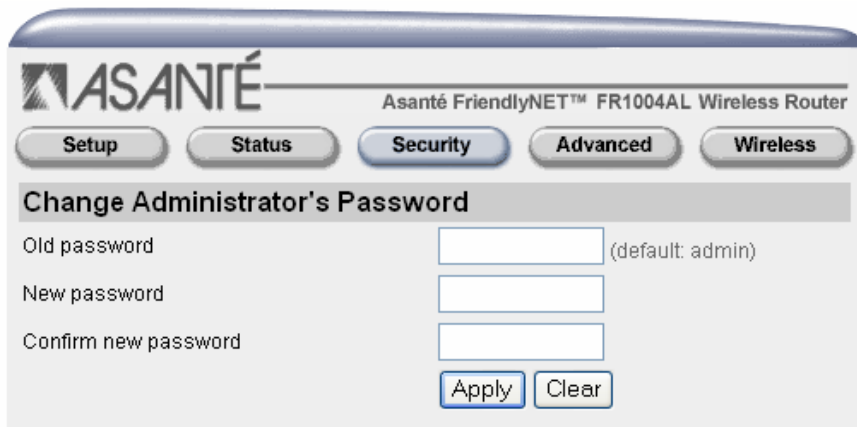
Help
Click to see a summary explanation of the buttons and controls on this page.

Chapter 4. Security

Asanté routers are frequently installed in schools, libraries, cafes, and other public areas. To guard against unauthorized network access, this chapter details how to configure the router's many security features to protect your network. To configure these settings, you should have a strong working knowledge of TCP/IP and the Internet.

From the top navigation bar, click on the **Security** button to access the features described in this chapter.

4.1 Change Administrator's Password

The default password is **admin.** For security reasons, you should change it and record your new password in a safe place. Click on the **Apply** button to save your changes. The password fields will be automatically cleared.

Tip: *In the event you forget your password or re-define the router's security so that you are not able to use the router, you will need to reset the router to factory defaults. Locate the **reset** button on the router. It's on the back of the FR1004 (wired) and on the front of the FR1004AL (wireless) router. Turn off the power to the router. Using a pen, hold in the reset button and turn on the power to the router. In a few minutes, the router's status indicators will stop flashing and the default factory settings will be loaded.*

4.2 Security Options

Security Options

Administrator Timeout	600 seconds(0 to disable)
Discard PING from WAN side	☐ Enable
Non-standard FTP port	0

Apply   Clear

Administrator Timeout
After this time, the router's administration screen will automatically log you out and you will need to re-enter your password to continue. Enter **0** to disable the timeout feature.

Discard PING from WAN side
When enabled, this router will discard all attempts to detect this router from the Internet (WAN). However, it will respond to PING from the LAN side.

Non-standard FTP port
The default is **0** (no port); the typical port control setting is 21. Entering a non-standard port number may increase the security of your FTP service.

Click on the **Apply** button to save your changes.

4.3 Secure Packet Inspection (SPI)

The router acts as a natural firewall using network address translation (NAT) to hide the IP addresses of all computers connected through the router's LAN ports. From time to time, you may choose to open ports on the router to permit specialized traffic to enter your LAN.

Secure Packet Inspection[*]

Inbound Packet Filter	Configure
Outbound Packet Filter	Configure

Help

The SPI feature of this router allows you to define a very robust firewall that can protect both incoming and outgoing traffic. Click on the appropriate **Configure** button to setup your filters.

INBOUND PACKET FILTER

The following will describe the Inbound filter; the Outbound filter works in the same way, except:

- The inbound filter evaluates all packets that pass through the Virtual Servers or DMZ host. See Chapter 6 (Advanced) of this manual for more information on these features.
- The outbound filter applies to all traffic from the LAN side of the router (ports 1-4).

Tip: *As a parental control (or "business control"), you can limit access to websites by specifying their IP addresses and port 80.*

Inbound Packet Filter
Uncheck the **Enable** checkbox to turn off all the Inbound filters (even the ones that are individually checked as *Enabled*.)

Allow (or Deny) all packets...
Allow means that all inbound packets to the virtual server and DMZ will be allowed except the ones defined by the following rules. Choose *Deny* to exclude all inbound packets except those matching the following rules.

ID
The router will automatically number each rule for you. You may define up to 8 rules.

Source IP
You may limit incoming traffic by IP address. Leave this field blank if you want the rule to apply to all IP addresses.
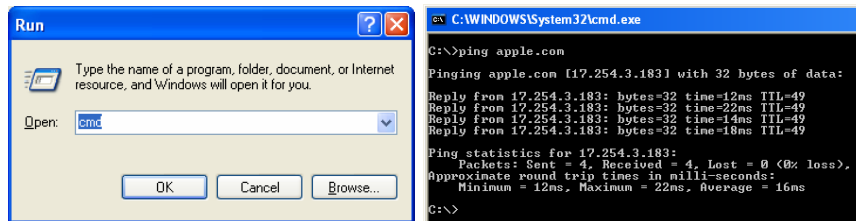
Tip: *To find the IP address of a specific website, try using the ping command. For example, open a command window and type **ping apple.com** to find that the IP address of its web server is **17.254.3.183**. Some sites may have multiple IP addresses for their web servers.*

Destination IP
The IP addresses of the computers on the LAN. Leave this field blank if you want the rule to apply to all computers on the LAN.

Ports
The TCP or UDP port. See *http://www.asante.com/support/routerguide/index.html* for a list of popular ports.

Enable
Check the box to enable each rule.
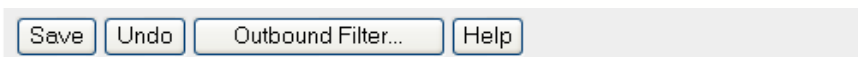
Save
Click the **Save** button to save your changes.

Undo
Resets to previously saved settings

Outbound Filter…
Define filters for outbound traffic.

4.4 Popular Applications

The Asanté router effectively hides all your computers behind its firewall using network address translation (NAT, RFC 1631) technology. The router's IP network address is exposed to the Internet, but your computers on the LAN are safely protected.
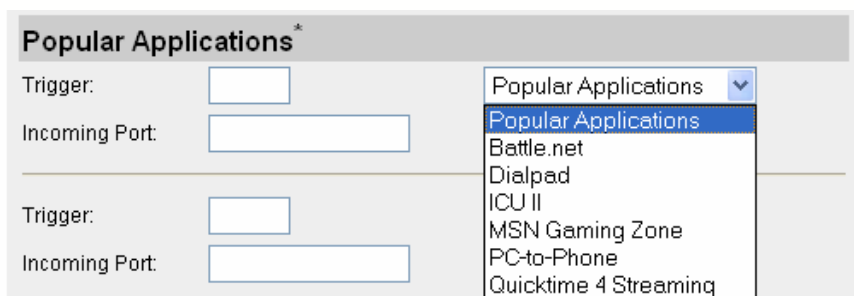
From time to time, you may want to selectively open your router's firewall to enable 2-way communications for your networked applications (or games!) for a single computer on your network. Use the Popular Applications feature to define those settings.

The router's pre-defined settings will quickly get you started i\If you are planning to use one of the following applications:

- Battle.net
- Dialpad
- ICU II
- MSN Gaming Zone
- PC-to-Phone
- QuickTime 4 Streaming

Tip: *If your computer is running Windows XP, then the router will be automatically configured using Universal Plug and Play (UPnP) for many applications, including Windows Messenger.*

Tip: *You can also define up to four custom settings for your applications, but only one computer can use the port settings at a time. If more than one computer needs simultaneous access, then use the router's DMZ feature.*

Trigger

The outbound port used by your application.

Incoming Port

After the trigger port is detected, inbound packets to the specified port numbers will be allowed to pass through the router's firewall. Unlike other routers that keep the ports open all the time, the Asanté router will close the port 60 seconds after the last network activity.

Save

Click on the **Save** button to save your settings.

Application	Trigger	Incoming Ports
QuickTime 4 Client, RealAudio (Port 554)	554	6970-32000
RealAudio (Port 7070)	7070	6970-7170
Windows 2000 Terminal Server	3389	3389
ICQ	4000	20,000-20,019

Tip: *For a list of application ports, visit http://www.asante.com/support/routerguide/index.html.*

4.5 Hardware (MAC) Address Control

Every network device has a unique hardware address known as a *media access control* (MAC) address. This address is assigned by the manufacturer and hard-coded into each Ethernet port.

If you have a built-in 10/100 Fast Ethernet port on your computer and added a wireless 802.11b (or Apple Airport-compatible) network adapter, then you would have:

- One MAC address for your built-in 10/100 port
- Another MAC address for your wireless port

Tip: *If you are using the FriendlyNET FR1004AL wireless router, you may want to turn on this important security feature.*

Hardware (MAC) Address Control*

This advanced security feature allows you to configure special access rights for each client.
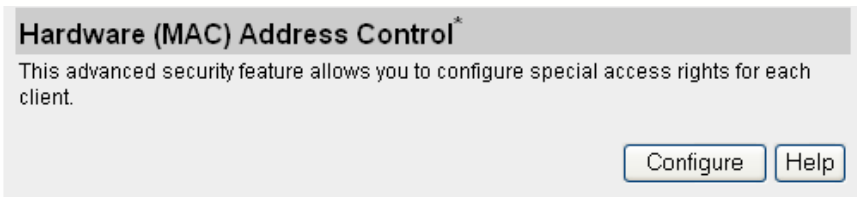
Configure   Help

Configure
Click on the **Configure** button to open the *Hardware (MAC) Address Control* page; this page has different settings for the FR1004 (wired) and FR1004AL (wireless) routers.

FR1004 WIRED ROUTER
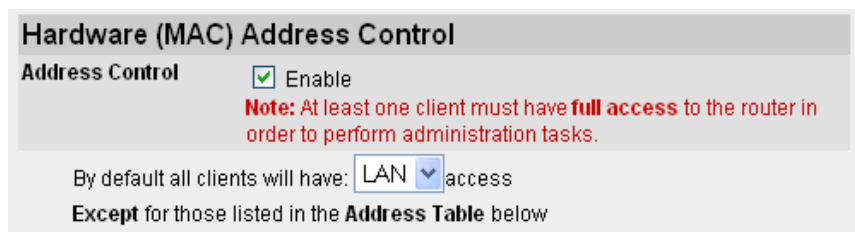
Hardware (MAC) Address Control

Address Control   ☑ Enable
Note: At least one client must have **full access** to the router in order to perform administration tasks.

By default all clients will have: LAN ▾ access
Except for those listed in the **Address Table** below

Address Control
Check this box to turn on hardware (MAC) address control.

Default Settings
By default, all computers connected to the router will only have **LAN** (no Internet) access. Use the following *Address Table* to define exceptions to this default rule.

Address Table

Select client 00-00-94-A1-C5-64 : 192.168.123.106 (jhsia-ibm) ⌄

[Copy] to ID 1 ⌄ below

ID	MAC Address	Access Type
1	00-00-94-A1-C5-64	LAN & WAN ⌄
2		LAN ⌄

To set specific access controls for each computer on your LAN:
1. Locate the computer listed in the client drop down list. For your conven-
   ience, each computer is listed with its MAC address, IP address and com-
   puter names.
2. Choose an ID number from the drop down list. You may define rules for up
   to 32 client computers.
3. Click the **Copy** button to add or update the entry in the list below.
4. Choose the appropriate access type: *LAN (no Internet access)* or *LAN &*
   WAN (full access).
5. Click the **Save** button to save your changes.

If you have more than 4 entries, click on the **Next page** or **Previous page** but-
tons.

Note: *At least one computer must have full access in order to perform adminis-*
trative tasks.

FR1004AL WIRELESS ROUTER

Address Control
Check this box to turn on hardware (MAC) address control.

Default Settings
By default, all wired computers connected to the router's LAN ports will have **Full** access. Alternatively, you may also select **LAN & WLAN** to turn off access to the Internet (WAN and other network services).

By default, wireless computers connected to the router will have **No** access. Select **Full** to permit access to the LAN and Internet.

Use the following *Address Table* to define exceptions to these default rules.

Address Table

Select client [00-00-94-B5-47-5C : 192.168.123.111 (jhsia2) ▼]

[Copy] to ID [1 ▼] below

ID	Client Type	MAC Address	Access Type
1	Wireless ▼	00-00-94-B5-47-5C	LAN & WLAN ▼
2	Wired ▼		LAN & WLAN ▼
3	Wired ▼		LAN & WLAN ▼
4	Wired ▼		LAN & WLAN ▼

[Previous page]   [Next page]   [Save]   [Undo]

[Log Out]

To set specific access controls for each computer on your LAN:
1. Locate the computer listed in the client drop down list. For your conven-
    ience, each computer is listed with its MAC address, IP address and com-
    puter names.
2. Choose an ID number from the drop down list. You may define rules for up
    to 32 client computers.
3. Click the **Copy** button to add or update the entry in the list below.
4. Choose the client type: **Wired** or **Wireless**.
5. Choose the appropriate access type: *LAN & WLAN (no Internet access)* or
    LAN & WLAN & WAN (full access) or *No Access (cannot attach to wire-
    less network and access any network or Internet resources)*.
6. Click the **Save** button to save your changes.

If you have more than 4 entries, click on the **Next page** or **Previous page** but-
tons.

Note: *At least one computer must have full access in order to perform adminis-
trative tasks.*

4.6 Advanced Security

> **WARNING**: Exercise caution before making changes in this section. Improper settings could seriously compromise the security of your router and your network.

Advanced Security[*]

| IP Address of DMZ host | 192.168.123.[ ] | ☐ Enable |
| IP Address for remote host administration | 0.0.0.0 | ☐ Enable |

[Apply New Advanced Security Settings] [Undo] [Help]

*-This feature should only be used by users with an extensive knowledge of TCP/IP.

DeMilitarized Zone (DMZ)
You may configure a single computer to be logically "outside" of the router's protective firewall. A computer in the DMZ will have unrestricted 2-way communications with the Internet (WAN). You should consider this option only when your networked application or service cannot be accommodated through the router's *Distributed Servers (see Chapter 5)* or *Popular Applications (see Section 4.4)* settings.

Note: *If you enable this option, you should define the Secure Packet Inspection (SPI) filters to protect your DMZ computer from unauthorized access or tampering.*

To logically place a computer in the router's DMZ:
1. Enter the IP address of the target computer. The first three numbers of the IP address (default is 192.168.123) are automatically inserted for you.
2. Click the **Apply New Advanced Security Settings** button to save your changes.

Remote Administration

The router's administrative functions are normally available only to computers on the LAN or wireless LAN (WLAN). If you want these administrative functions available to support individuals outside your network, you will need to enable this feature.

To enable administration of the router:
1. Enter the IP address of the remote computer. If an IP address of 0.0.0.0 is entered, then any workstation on the Internet (WAN) can perform router administration with the correct password.
2. Check the **Enable** box. When this feature is enabled, the remote administrator must enter the router's WAN IP address followed by **:88** in order to reach the web port (e.g., 10.0.0.1:88).

To administer the router from a remote location:
1. Start your web browser.
2. In the location field, enter the router's WAN IP address (e.g., 10.0.0.1).
3. Then enter :88 to reach the router's web port.
4. Click the **Apply New Advanced Security Settings** button to save your changes.

Example: To administer the router (with an IP address of 10.0.0.127), enter **http://10.0.0.127:88** in the remote browser's *Address* field.
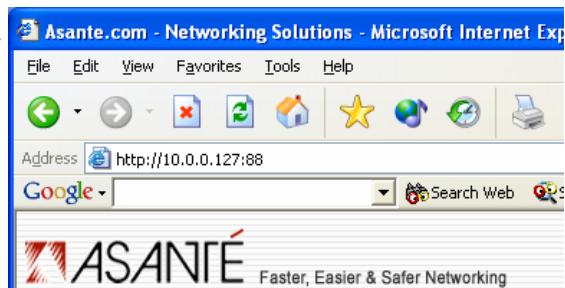
Chapter 5. Advanced

If you have a strong technical background in TCP/IP and networking, you'll appreciate the advanced features of this router:

- Host your own website—even if you have a dynamic IP address
- Re-direct incoming traffic to dedicated mail, ftp, web and other servers
- Upgrade your router's firmware
- Backup all of your router's settings to an external file

If you need help, consult your authorized Asanté Advantage reseller for assistance. Please note that Asanté Technical Support only provides email or web-based support for Advanced features.
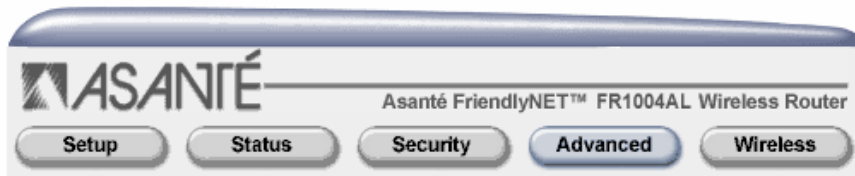
From the top navigation bar, click on the **Advanced** button to access the features described in this chapter.

5.1 Advanced Router Setup
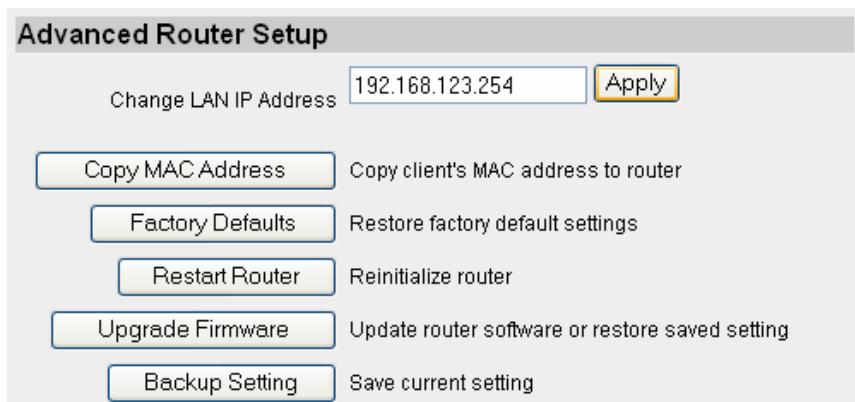
Change LAN IP Address
The router has **two** IP addresses. This is your router's LAN address; factory default is 192.168.123.254. Under most conditions, you should avoid changing

this address. The router's 2nd address, the WAN IP address, is set in Chapter 3 (WAN Types).

Changing the router's LAN IP address also affects:
- IP address for administration
- DHCP server

To change the address, enter the number and click **Apply**. You may be asked to re-start the router.

Copy MAC Address
For security reasons, some ISPs will limit your Internet service to a single registered network adapter. This router allows you to mimic the registered network adapter by cloning its hardware (MAC) address; it's not just for Apple Macintosh computers!
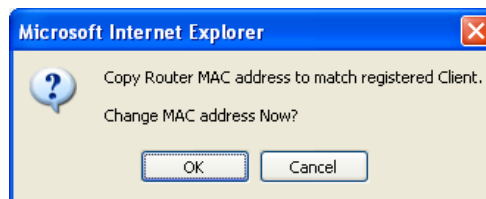
Factory Defaults
Reset all of the router's settings to the original factory default values. You will need to restart or renew the IP address for all computers attached to the router.
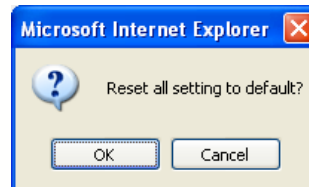
Tip: *You may also reset the router by turning off the router, holding in the **Reset** button (on front or back panel of the router) and turning on the power to the router.*

Restart Router
Reinitialize the router using the last saved settings. This is similar to turning the router's power off and on. No settings are changed with this feature. You will need to restart or renew the IP address for all computers attached to the router.

Upgrade Firmware

From time to time, Asanté will provide firmware updates to improve performance and to ensure compatibility. To upgrade the router's firmware:

1. Click on the **Upgrade Firmware Setting** button.

Firmware Filename

Current router firmware version is R1.1AL. Please visit www.asante.com to download the latest router firmware file. After downloading, click the *Browse...* button below to select the file and click on the *Upgrade* button. The upgrade procedure takes about 20 seconds.

Note! Do not power off the unit when the router is being upgraded. When the upgrade is done successfully, the unit will restarted automatically.

[   ] [Browse...]

[Upgrade] [Cancel]

2. In the Firmware Filename screen, check for the latest firmware by clicking on the www.asante.com link.
3. On the Asanté website, click on Support and look for "FriendlyNET FR1004 Series router" firmware downloads. If you have the wired router, check for **FR1004** firmware; if you have the wireless router, check for **FR1004AL** firmware.

File Download

You are downloading the file:

config.bin from 192.168.123.254

Would you like to open the file or save it to your computer?

[Open] [Save] [Cancel] [More Info]

☑ Always ask before opening this type of file

4. Save the new firmware in a place you can easily find (e.g., desktop).
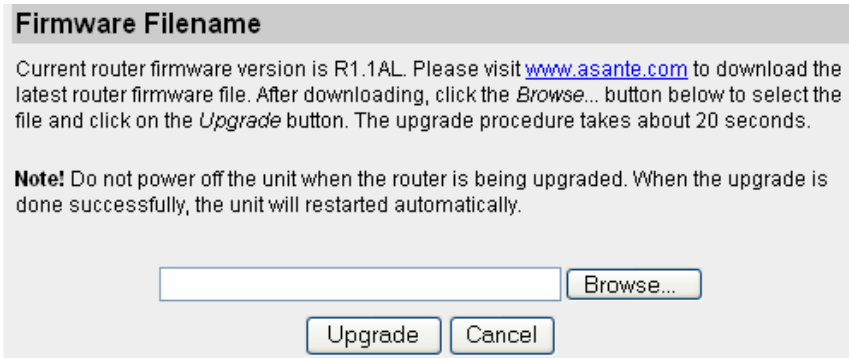5. In the Firmware Filename screen, click on **Browse…** button to locate the file you just downloaded. Search for the filename ending in ".BIN".
6. Physically disconnect all the other computers and the Internet connection by removing all the network cables except the one currently running the router's administration. This precaution protects the router from being interrupted during the upgrade process; an interruption could corrupt the router and cause it to require factory servicing.
7. Click on the **Upgrade** button to start uploading the firmware into the router.
8. In a few minutes, the upgrade process will be completed. Do not turn off the router until this process is completed.
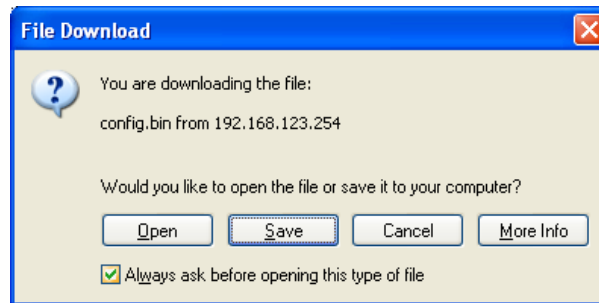
Tip: *If the process is not completed after 10 minutes, try refreshing the web browser's screen by pressing the **F5** key.*
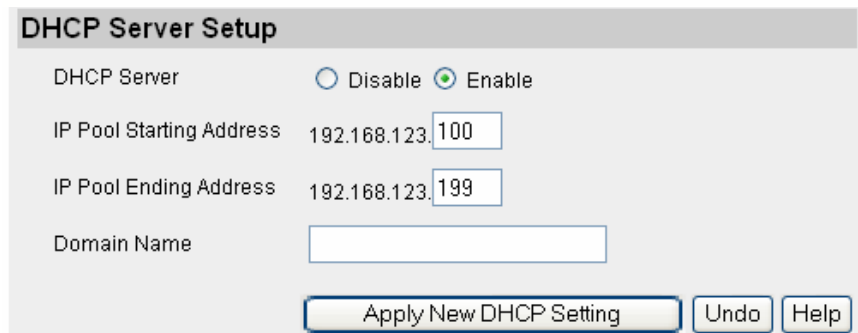
Backup Setting
Save your router settings into a file on your computer.

Tip: *Asanté strongly recommends that you use this Backup Setting command to save all of your router settings. In the event of a major malfunction, you can quickly restore the original settings by using the **Upgrade Firmware** command.*

Tip: *If your organization is planning to deploy many routers with the exact same configuration, use the **Backup Setting** to save a "master configuration" and then use **Upgrade Firmware** to synchronize all the routers to same settings.*

5.2 DHCP Server Setup

Instead of manually assigning IP information (IP address, gateway, and DNS) to all computers and peripherals on the network, the router's Dynamic Host Configuration Protocol (DHCP) service can automatically handle this tedious task.

When a computer starts up, it will request IP address information. The router's DHCP service will automatically select an address from the available IP address pool.

DHCP Server
Select **Enable** (default setting) to use the router as a DHCP Server.

IP Pool Starting Address/Ending Address
The fixed portion of the IP address is set by the Router's LAN address; see Section 5.1 (Change LAN IP Address).

By default, the starting octet is **100** and the ending octet is **199**. This means the router assigns up to 200 IP addresses from 192.168.123.100 through 192.168.123.199. If you have more than 200 computers in your LAN, then you may want to change these settings.

Note: *Be sure your computers are properly configured to obtain IP address information automatically. If they are not receiving a proper IP address information,*

verify that there is only one DHCP server (or router) on the LAN. If you have multiple DHCP servers, then disable the DHCP service on all but one server.

Domain Name
You may also specify Domain Name Server (DNS) server addresses for all con-nected computers on your LAN.

5.3 Dynamic DNS

If you want to host your own web servers, one or more static IP addresses are strongly recommended; see your ISP for information on upgrading your account. For many home users and small organizations, a **dynamic DNS service (DDNS)** can provide most of the functionality you need—at a fraction of the cost of renting static IP addresses from your ISP.

The router supports a few of the most popular DDNS, including DynDNS.org. For a "voluntary" contribution of US$30, they can dynamically provide name ser-vices (DNS) to match your dynamic IP address. This means your organization's www.iloveasante.org (fictitious) website can be hosted on a computer on your network—even though you have a budget-priced, basic cable/DSL service.

Dynamic DNS

DDNS	⊙ Disable ○ Enable
Provider	DynDNS.org ▾
Host Name	[ ]
Username / E-mail	[ ]
Password / Key	[ ]
	[Apply New DDNS Setting] [Undo] [Help]

 Whenever your dynamic IP address changes, the router will automatically in-form your DDNS provider of your new address.

DDNS
Click to enable this service.

Provider
Choose your DDNS provider from the drop-down menu. Asanté does not en-dorse or recommend any DDNS provider.

Host Name, Username/E-mail, Password/Key
After you open an account with your DDNS, they will provide you with this information. Enter this information here.

Tip: *If you want to use a dedicated computer as a web server, then you'll want to enable it as a distributed server; see the following section.*

5.4 Distributed Servers Setup

One of the most powerful features of this router is its ability to redirect inbound Internet traffic to specific computers on the LAN (and computers connected to the router's LAN ports). If you have a growing Internet business and a static IP address (or dynamic IP address—if using a DDNS provider), then use this feature to handle network requests for up to 20 separate severs. Although each server can handle multiple network services, only **one** server can be assigned to each network service.

Distributed Servers Setup

Port ID	Service Ports	Server IP	Enable
1		192.168.123.	☐
2		192.168.123.	☐
3		192.168.123.	☐
4		192.168.123.	☐

For each **Service Port**, select one computer to handle all requests to this port. For the **Server IP**, enter the last octet (the number after the last period) of the computer's IP address. For example, if you have four computers and you want to configure popular Internet servers, then specify distributed servers using a mapping similar to the example below:

Port	Service	Server IP	Enable
21	FTP Server	192.168.123.100	√
25	Email Server	192.168.123.101	√
80	Web Server	192.168.123.102	√
110	Post Office Server	192.168.123.103	√

Tip: *To quickly enable popular services, use the "Common Ports" at the bottom of the screen or press the **Help** button to see a list of service ports.*

Always restart the router to complete the changes after entering or changing the values.

Chapter 6. Wireless

The FriendlyNET FR1004AL is a powerful wireless router. Compared to the FR1004, the FR1004AL adds:

- An AeroLAN wireless access point for Apple Airport, Wi-Fi and other IEEE 802.11b-compatible equipment
- Dual diversity antennas with high performance signal amplifier to provide maximum signal strength and data integrity
- Multiple security levels including hardware-based MAC address controls to lock out unauthorized users
- An integrated network print server

6.1 Configuration Considerations

Using factory default settings, you should be able to connect to router using either wired or wireless network connections. Be sure your computer is accepting dynamic network IP addresses assigned by the router.

If you are planning to use more than one Asanté wireless router (or equivalent), you have the option of having:
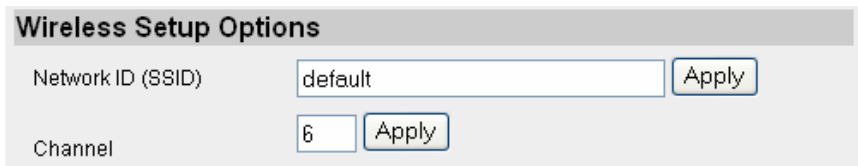
A. One wireless network with multiple routers (or wireless access points), or
B. Two (or more) separate wireless networks.

To implement option A, verify that the Network IDs are the same on all units. To implement option B, be sure to set a unique Network ID (SSID) and Channel number for each router (or wireless access point).

6.2 Wireless Settings

From the top navigation bar, click on the **Wireless** button to access the features described in this chapter.
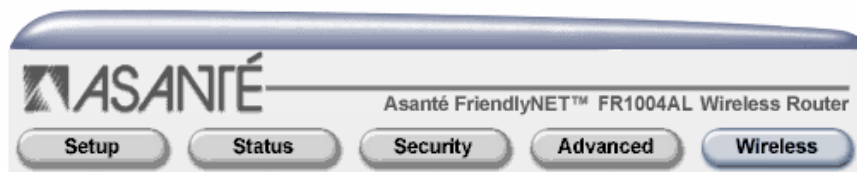
Wireless Setup Options

Network ID (SSID)	default	Apply
Channel	6	Apply

Network ID (SSID)
Enter up to 32 characters as a *Service Set IDentifier* for your wireless LAN (WLAN). You may use any combination of printable alpha or numeric characters. Since this field is case-sensitive, *default* is **not** the same as *Default*. The SSID separates one WLAN from another; it must be unique.

Some acceptable examples include:

- `default`
- `wireless`
- `AsanteFriendlyNET`

Tip: *Because the network ID can easily be discovered, do not use any secret information (like other passwords) as your SSID.*

6.3 WEP Security Settings

The router uses the IEEE 802.11b standard wired equivalency privacy (WEP) security protocol. Since any encryption security can be compromised, WEP offers basic privacy protection.

Before turning on WEP, verify that your WLAN connections are working properly. Otherwise, it will be significantly more difficult to troubleshoot the network if you turn on security settings. Once you have verified the wireless range and performance, you should turn on WEP.

WEP Security
Click to enable 64-bit or 128-bit shared key security. Normally, you would turn on 128-bit security—unless you have some older equipment that can only handle 64-bit (or 40-bit) WEP.

WEP Key 1, 2, 3, 4
Each key consists of hexadecimal numbers (0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C D, E, F). If you are using 64-bit WEP, you may specify up to 4 different security keys. Each key may be up to 10 digits long. Examples:

- `0123456789`
- `408ABCD942`

WEP Security Settings

WEP Security
- ⦿ Disable WEP
- ○ Enable IEEE 64-bit Shared Key Security
- ○ Enable IEEE 128-bit Shared Key Security

- ⦿ WEP Key 1 [   ]
- ○ WEP Key 2 [   ]
- ○ WEP Key 3 [   ]
- ○ WEP Key 4 [   ]

[Apply New WEP Security Options] [Undo] [Help]

With 128-bit WEP, just specify one key up to 26 digits long. Examples:

- `0123456789A1234567890B123456`
- `ABCDEF01234567890ABCDEF01234`
- `F1004ABCD0123456789012345678`

Note: When disabling WEP after using a 64-bit key, the router will add zeros
(0000) to the end of the WEP key. If you wish to re-enable WEP using the 64-bit
key, simply delete the extra zeros.

6.4 Interoperability with Apple AirPort

The Apple AirPort Wireless Card enters and stores the WEP Security Key differ-
ently from the Asanté router
and all other wireless
802.11b devices.

On your Macintosh, click on
the AirPort icon on your com-
puter's control strip. Select
the Asanté FR1004 router. To
enter the standard WEP key,

**The selected AirPort network requires a
password to join.**

Password: [••••••••••••]

☐ Add to Keychain [Cancel] [OK]

use the $ prefix and then enter the WEP key. Examples:

- `$0123456789`
- `$408ABCD942`

6.5 Tips for Better Wireless Reception

The signal quality and range of any wireless card is depends on the environment in which it is placed. Here are some tips on getting the most out of your wireless network when using the Asanté wireless router.

- The best rule of thumb for good signal strength and quality is to have line-of-sight from the router to all the other wireless computers. This means the user should be able to see the router from the location where the wireless client is placed
- Keep the wireless router in an open area—away from any large objects such as cubicles, walls, or other obstructions
- Keep the wireless router away from any electro-magnetic emitting devices such as computers, electrical cables, televisions, and other appliances commonly found in the home or office
- Keep obstructions from the immediate vicinity of wireless card antennas
- Elevate the wireless router above desktop clutter and low- to mid-level obstructions, such as furniture
- Rotate the wireless router and computers until the best signal strength is achieved
- The number of walls, windows, doorways, and other building structures will reduce the range of the wireless signal. Place the wireless router in the path of least resistance through these structures for the best signal quality to the wireless workstations
- The type of walls, windows, doorways, or other building structures will affect the range of the wireless signal. Structures such as metal-framed housed windows containing UV protective film, and residences with multiple floors, will all affect the signal quality
- Standing too close to a wireless card antenna will reduce its signal strength and quality

Chapter 7. Network Print Server Setup

Your FriendlyNET FR1004AL wireless router can also function as a network print server for Macintosh, Windows, and UNIX/Linux computers.

This chapter describes how to share a printer with:
- Apple Mac OS 7-9
- Apple Mac OS X
- Microsoft Windows
- UNIX/Linux

7.1 Connecting Printer

Connect your printer to the router:
1. Connect one end of a standard parallel printer cable (sold separately) to connect the router, and the other end to the router.
2. Turn on the printer and verify that any self-test is performed successfully.
3. Re-start the router by turning its power off and on. Verify that it passes the power on self-test and the status indicators are normal (see the back cover of this manual).

7.2 Printer Drivers for Mac OS 7-9

To share a printer with Apple Mac OS 7-9, you must meet specific system requirements and create a desktop printer icon.

System Requirements
- Mac OS 7.6.x, Mac OS 8.1, or Mac OS 9
- Apple LaserWriter driver v 8.5.1 or later
- Desktop Printer Spooler 2.1 extension or later
- Desktop Print Monitor 2.1 extension or later
- Desktop Printer Utility 1.0 or later
- Open Transport 1.1 or later
- PostScript-compatible printer attached to the router's printer port

Note: *These drivers, extensions, and utilities are installed during a normal installation of the Mac OS. If a Custom Installation was performed, you may need to go back and install other modules from your Macintosh CDs to obtain these files.*

Creating the Desktop Icon

To create the desktop printer icon:

1. Look in the *Apple Extras* folder (at the root level of your hard drive) for the **Desktop Printer Utility**. Double-click to launch this program.

2. Select the Printer (LPR) and click **OK**.

Note: *In the example, an HP LaserJet 4MP is being used as a network printer. This type of printer utilizes the LaserWriter 8 driver. Your printer may utilize a different type of driver.*

3. Change the "Postscript Printer Description File" (PPD) to match the printer.

Note: *The printer in this example is the HP LaserJet 4MP. Choose the appropriate Postscript Printer Definition File (PPD) for your printer. If your printer is not on this list, refer to your printer manufacturer's website for an updated list of PPDs.*

4. Select **Change** under Internet Printer and click **OK**.

Note: *The Internet Printer may also be labeled "LPR Printer."*

5. Enter the LAN IP address of the router. Enter **lp** (lowercase LP, not "ip") for the queue name.

Note: The default IP address is **192.168.123.254**. *If you are unsure of the LAN IP Address of the router, you can find it on the Status Screen of the router. Refer to Chapter 3 (Status) for more information.*

6. Click **Verify** to ensure that a connection is made, and then click **OK**.

7. Go to the File Menu and select **Save**.

8. Enter a name and location for the desktop printer icon and click **Save**. The default name is the printer's IP address, and the default location is the desktop.

Note: *The name entered here is what the Desktop Printer Icon will be named. This name may be renamed like any file or folder.*
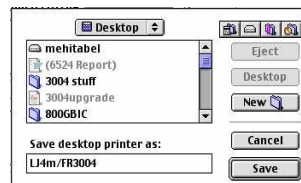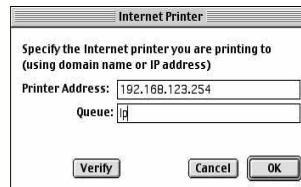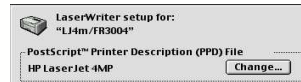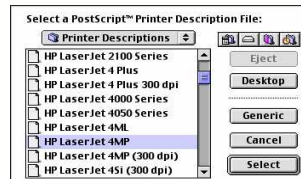
After the icon is on the Desktop, or wherever it was saved, the printer options will need to be manually configured. This step is essentially the same as choosing **Configure** after setting up a printer in the Chooser. To set the options, highlight the **Desktop Printer** icon and select **Change Setup** from the Printing menu.

The configuration of your desktop printer icon is now complete.

7.3 Printer Drivers for Mac OS X

Macintosh users running Mac OS X ("Jaguar", version 10.2 and later) have a third-party option that supports many non-PostScript personal printers (including color inkjets from Epson, HP, Canon and Lexmark) on the network. The programs Gimp-Print and its companion ESP Ghostscript have been useful for some users.

Although Asanté does not provide technical support for these third-party programs, a copy of these programs is provided on the FriendlyNET FR1004 Series CD-ROM.

Additional information may be found at the website http://gimp-print.sourceforge.net/MacOSX.php3

7.4 Printer Drivers for Windows

The printer connected to the router's **Printer** port is called a *shared printer*. To share the printer, you will need to install the special Asanté printer driver and configure a printer on each computer.

To install the Asanté virtual printer driver:
1. Insert the FR1004 Series disk into your CD-ROM drive.
2. Run the SETUP.EXE file from the CD-ROM. Please wait until the Welcome dialog box appears, and click on the **Next** button.
3. Select a destination folder or click **Browse** to choose another location.
4. Click **Next**. The setup program will begin installing all the programs into the specified destination folder. When the setup program is completed, click **Finish**.
5. When prompted, choose the option to re-start your computer and click **OK**.

To configure your Asanté printer driver, refer to the information corresponding to your operating system.

Windows 95/98/Me

To configure the shared printer:
1. From the Start button, click on **Settings > Printers.**
2. In the Printers dialog box, double-click on **Add Printer** and follow the on-screen instructions.
3. In the Printers dialog box, right mouse click on the printer icon and choose **Properties** from the menu.
4. From the **Details** tab, locate the **Print to the following port:** drop-down list. Choose the **PRT: (FriendlyNET Print Server)** from the list. Be sure that the printer driver item is configured to the correct driver for your *shared printer*.
5. Click on **Port Settings**.
6. Enter the LAN IP address of the router (default is **192.168.123.254**), and then click the **OK** button. Verify all of your settings are correct and then click the **OK** button again.
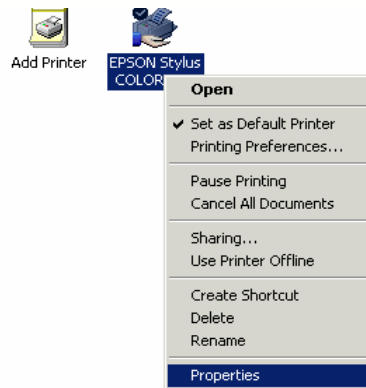
Windows XP

To configure the shared printer:
1. From the Start button, click on **Settings > Printers and Faxes.**
2. In the Printers dialog box, double-click on **Add Printer** and follow the on-screen instructions.
3. In the Printers and Faxes dialog box, click on **Set printer properties** from the task list on the left.
4. Click on the **Ports** tab and select the **Shared this printeras** option.
5. Click on the **Ports** tab. Select the printer and click on the **Configure Port…** button.
6. Enter the LAN IP address of the router (default is **192.168.123.254**), and then click the **OK** button. Verify all of your settings are correct and then click the **OK** button again.

Windows NT

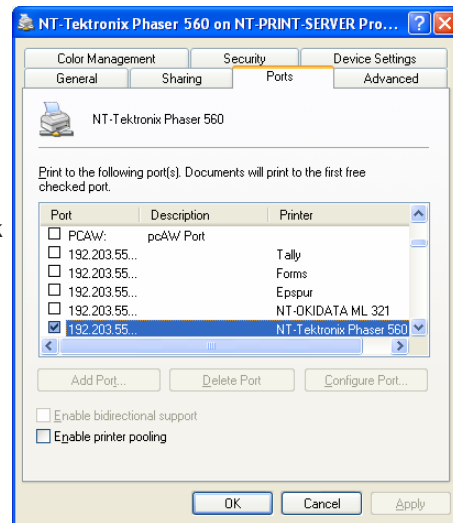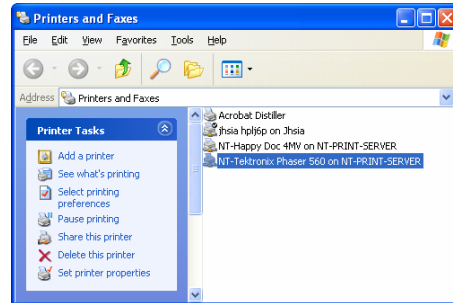To configure the shared printer:
1. From the Start button, click on **Settings > Printers.**
2. In the Printers dialog box, double click on **Add Printer** and follow the on-screen instructions.
3. In the Printers dialog box, right mouse click on the printer icon and choose **Properties** from the menu.
4. From the **Ports** tab, locate the **Print to the following port:** drop-down list. Choose the **PRT: (FriendlyNET Print Server)** from the list. Be sure that the printer driver item is configured to the correct driver for your *shared printer*.
5. Click on **Configure Port**.
6. Enter the LAN IP address of the router (default is **192.168.123.254**), and then click the **OK** button. Verify all of your settings are correct and then click the **OK** button again.

Windows 2000

To configure the shared printer:
1. From the Start button, click on **Settings > Printers.**
2. In the Printers dialog box, double-click on **Add Printer** and follow the on-screen instructions.
3. In the Printers dialog box, right mouse click on the printer icon and choose **Properties** from the menu.
4. Click on the **Sharing** tab and select the **Shared as** option.
5. Click on the **Ports** tab. Select the **PRT Local Port** option. You should see the name of your printer next to this port.
6. Click on the **Configure Port…** button.
7. Enter the LAN IP address of the router (default is **192.168.123.254**), and then click the **OK** button. Verify all of your settings are correct and then click the **OK** button again.

Tip: *Be sure to install the correct printer driver into the client's Printer directory before attempting to configure the print server.*

## 7.5 Printer Drivers for UNIX/Linux

The standard LPR print service will work with the router. No additional software is required.

Appendix A. Troubleshooting Client IP Addresses

After you have configured your router, you should restart all of the computers connected to the router. This allows each computer to receive all of its network IP address settings.

To verify that the router is providing the correct information, check the router's status screen:

1. Login to the router's administration utility by pointing your web browser to **http://192.168.123.254** (default address).
2. From the Status screen, click on the **View DHCP list** button at the bottom of the screen.
3. In the DHCP Client List, you should see entries for all of the computers attached to your router.
4. If not, click the **Refresh** button to update the screen.
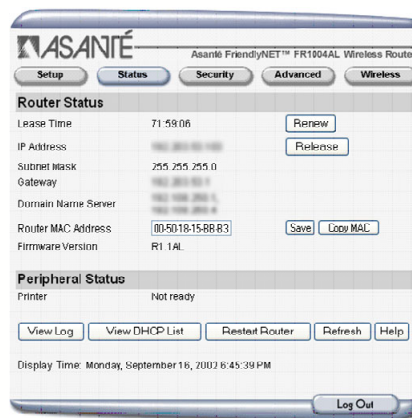
If your client computers are still not successful in connecting to the Internet through the router, verify the IP address settings for each computer.

Perform the following to renew the IP addresses of client computers after configuring your FR1000 Series Router.

A.1 Windows 95/98/Me

You can view and update the IP address settings for each computer by running the Microsoft utility, **winipcfg**:

1. From the Start button, click on **Run...**
2. In the Run dialog box, type **winipcfg** and press the **Enter** key.
3. Select your network adapter card from the drop-down list.
4. To reset the IP address, click the **Release All** and then the **Renew All** buttons.
5. Click **OK** to close the utility.
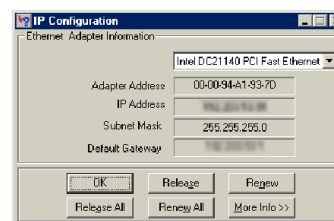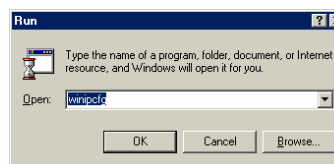
A.2 Windows NT/2000/XP

You can view and update the IP address settings for each computer by running the Microsoft command line utility, **ipconfig**:

1. From the Start button, click on **Run...**
2. In the Run dialog box, type **cmd** and press the **Enter** key. This will open the command line window.
3. To view all the IP settings, type **ipconfig /all** and press **Enter.**
4. To reset the IP address, type **ipconfig /release** and press **Enter**.
5. To renew the IP address, type **ipconfig /renew** and press **Enter**.
6. Type **Exit** to close the window.
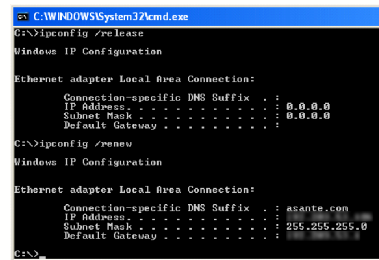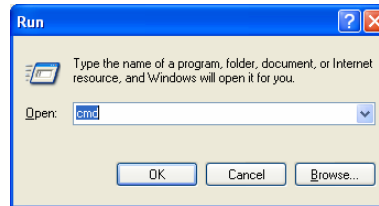
A.3 Mac OS

It is not necessary to renew the IP address of any Macintosh client configured for DHCP Server. The IP address is automatically renewed whenever an Internet application is launched.

Appendix B. Advanced Troubleshooting

If you are having difficulties accessing the router, Asanté Technical Support will ask you to verify the physical and logical connections from your computers to the router. To save time, you may want to work through these exercises on your own before contacting Asanté for assistance.

B.1 Verifying Connections to the Router

Use the ping utility to verify access to the router. If you need assistance with the ping utility, see the following sections B.2 and B.3.

1. Can you reach the router's administration utility using **http://192.168.123.254**? You may also want to try **http://192.168.123.254:88**?
2. If you see the router's login screen, then you are successful. Otherwise, try pinging the router at its default address, **192.168.123.254**
3. If you can successfully ping the router, then you will need to disable your browser's proxy.

   Tip: *If you are using Internet Explorer, disable the proxy setting by clicking on the **Tools** menu. Choose **Internet Options** > **Connections** > **LAN Settings**. In the LAN Settings dialog, un-check the "**Use a proxy server**…" and click on **OK**.*

If you still cannot access the router, then check the following:
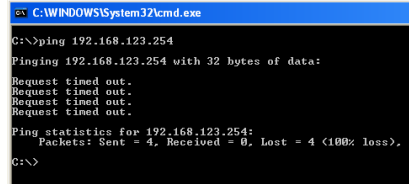
A. Check configuration of your computer. It must be on the same subnet as the router. For example if the router's address is 192.168.123.254, then all of your computers **must be** on 192.168.123.XXX.
B. Check the Link LEDs on each computer's network adapter port and the corresponding port on the router. If the LED is not on, then check the Ethernet cable(s).
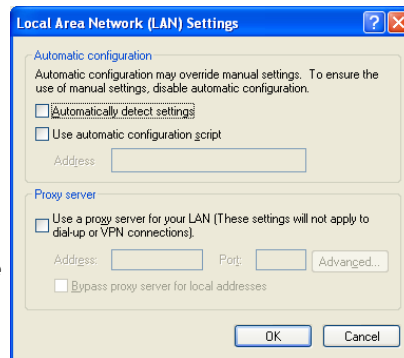
B.2 Using Windows Ping

To ping an IP address from Windows:

1. From the Start button, click on **Run...**
2. In the Run dialog box, type **command** and press the **Enter** key.
3. In the dialog box, type **ping 192.168.123.254** and click **OK**.

4. You'll see an MS-DOS dialog box, that shows the ping activity. If you see the error message, "Request timed out.", then there is no logical connection from your computer to the router.

B.3 Using Macintosh WhatRoute

Most versions of Mac OS do not include a ping utility. You may want to use the WhatRoute utility, included on the Asanté FR1000 Series CD-ROM, to ping your network devices.

To use WhatRouter:
1. Install the **WhatRoute** program from the CD-ROM.
2. Double-click on the **WhatRoute** icon to launch the program.
3. In the main window, select **ping** from the menu.
4. Enter the address of the router (192.168.123.254) in the Host: field.
5. Click **ping** to begin the test. If the request "times out," then there is no logical connection from your computer to the router.

B.4 Verifying Ethernet Cables

Ethernet network cables are used to connect all network devices, including computers and cable/DSL modems to the router. Faulty network cables, especially those that are "homemade" have been know to cause intermittent problems that may be difficult to troubleshoot.

To verify your network cable, check:

1. **All your cables are rated Category 5 (or CAT 5) or better**. This standard of cable is recommended for 10BaseT Ethernet networks and is required for 100BaseTX Fast Ethernet networks. If you cannot locate printing or other markings on the cable indicating that it is Category 5, then replace the cable!

2. **Cables should be wired "straight-through".** According to IEEE T568A or T568B specifications, cables should be wired so that pin 1 connects to pin 1, etc. The diagram shows T568B wiring. To determine if your cable is a straight-through cable, hold both ends of the cable together, with the clip pointing to the floor, away from you. Pin 1 is on your left. All the wires of each clip are identical. If they are different, you may have a "crossover" cable. The FR1000 Series routers feature **Auto-Uplink** and may accept either straight-through or crossover cables.

3. **Release and renew IP settings**. See Appendix A (Troubleshooting Client IP Addresses).
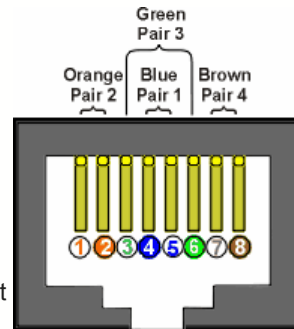
If your problem is with a hub or switch attached to the router, connect the computer directly to the router. If it does not function, then verify the cable connections between the router and your computer.

B.5 Cabling Tips

You can avoid common wiring mistakes by following these suggestions:

1. Avoid running cables near or across AC power cables.
2. Never use metallic staples to secure Ethernet cables. Clips or hangers used for telephone wires are available at most hardware stores.
3. Avoid running cables near "noisy" devices, including flourescent light fixtures, laser printers, copy machines, electric heaters, speakers, TV sets, microwave ovens, telephones, electric fans, and washing machines.
4. If you need to bundle a group of cables together with cable ties (zip ties), do not tighten them so tightly that the cables are deformed (or crushed).
5. Never stretch an Ethernet cables. If it's too short, use a longer cable. Stretching a cable can damage the internal cable or its contacts.
6. Never use an Ethernet cable outside of a building. This can produce a very dangerous lightning hazard.

Tip: *When in doubt, use an Asanté certified Gigabit Ethernet cable. Visit http://www.asantestore.com/friengigcab.html for details.*

Asanté FR1000 Series Trivia

The **FriendlyNET FR1004 Series** has two models:

* FR1004
* FR1004AL

The **FR** prefix indicates that it is a member of our award-winning FriendlyNET Router family. The FR1000 Series represents Asanté's routers for small office, home office users.

The digit **4** corresponds to the four 10/100 Mbps Fast Ethernet LAN ports on the unit.

On the wireless unit, the letter **A** is a configuration code corresponding to the integrated AeroLAN® wireless access point. The letter **L** represents the LPT (line printer) or parallel printer port.

Appendix C. Glossary

Authentication: The procedure to verify user identity as a security measure. Passwords and digital signatures are the most popular forms.

DHCP: *Dynamic Host Configuration Protocol*. A method for automatically assigning IP addresses to computers on a local area network. With dynamic addressing, a device can have a different IP address each time it connects to the network. Without DHCP, a network administrator would need to manually assign and track static IP addresses for each device on the network. The official specification is defined by RFC 2131.

Dialup: The procedure that activates an analog modem to connect to the ISP.

DNS: *Domain Name System.* An Internet service that maps alphabetic names into IP addresses. For example, **asante.com** is a domain name that resolves to the IP address **205.227.167.5**.

FTP: *File Transfer Protocol*. Allows a user on one computer to transfer files to and from another computer over a TCP/IP network. Requires software on both the client and the server. A computer that runs FTP Server software and is used to store files for downloading is called an FTP site or FTP server.

HTML: *HyperText Markup Language* – a text-based language used to build web pages and interpreted by web browsers. Because the files are not restricted to a single type of operating system, this allows websites to be platform-independent; that is, to be viewed by computers regardless of their platform.

HTTP: *HyperText Transmission Protocol*. The protocol that computers use for accessing web pages on the Internet.

Internet: A global network of interconnected computers and networks. Users access the Internet via web browsers, e-mail, and other applications.

Intranet: A private network offering services similar to those offered by the Worldwide public Internet, but for internal use by an organization.

IP Address: *Internet Protocol Address*. It is a unique number used to identify computers in an IP network. The format of the IP address is 4 fields separated by dots (for example: **192.168.132.250**).

ISDN: *Integrated Services Digital Network*. It is a fast digital phone line provided by most phone companies. Requires a special card or an additional external device for your computer. Your Internet Service Provider must be able to provide an ISDN connection.

ISP: *Internet Service Provider*. A company that provides access to the Internet for private and business users. This company handles the link from your computer to the rest of the Internet.

LAN: *Local Area Network*. A network of computers in a workgroup, department, or building (or home).

POP: *Post Office Protocol*. A standard protocol for exchanging e-mail messages between an e-mail client and an e-mail server.

PPP: *Point-to-Point Protocol*. A standard protocol for using a modem and telephone line to connect to a network using TCP/IP. This is accomplished by encapsulating IP packets in specialized Network Control Protocol packets.

PPPoE: *PPP over Ethernet*. A protocol allowing DSL connections to be turned on or off dynamically.

PPTP: *Point-to-Point Tunneling Protocol*. Microsoft's protocol to allow corporations to extend their networks through virtual "tunnels" over the Internet.

Print Server: A method for sharing a printer with other computers over a LAN. This feature is built into the FR1004AL.

PSTN: *Public Switched Telephone Network*. The telephone line network that is used when you make an analog telephone call.

RFC: *Request for Comments*. One of a series of documents defining a proposed protocol and requesting standardization. To retrieve an RFC, go to http://www.ietf.org/rfc/rfc**NNNN**.txt, where **NNNN** is the number of the target RFC.

SMTP: *Simple Mail Transfer Protocol*. Standard protocol for transferring electronic mail messages from one mail server to another. SMTP specifies how mail systems interact and the format of control messages.

SPI: *Secure Packet Inspection*. Also commonly called *Stateful Packet Inspection*. A firewall passes or blocks data based upon a set of pre-defined or user-

defined rules. Asanté's *Secure Packet Inspection* technology evaluates both incoming and outgoing packets based on multiple conditions: TCP/UDP ports, source address, destination address and packet states.

TCP/IP: *Transmission Control Protocol/Internet Protocol*. A standard set of protocols that govern the Internet. The TCP portion ensures that data is transmitted correctly between two computers. The data transmitted is split up into small portions called data packets. Each packet is confirmed as received before the next packet is sent. The IP portion of controls how these data packets are moved from one point to another. Each computer on the Internet has a unique IP address. The data packets are moved from the source computer to the destination computer through many different computers based on the IP address, similar to the way U.S. Mail is sent and delivered based on the address and ZIP Code.

Telnet: A program that allows a user to log in to a computer from a remote location. It allows a user at one site to transparently interact with, or pass through to, a remote system at another site, while appearing as a local terminal.

UDP: *User Datagram Protocol*. An alternative protocol to TCP and also used with IP. Typically used while accessing DNS servers and network management programs.

URL: *Uniform Resource Locator*. Compact string representation for a resource available via the Internet. For example, www.asante.com would be a URL for Asanté's website. Refer to RFC 1738 for more information.

WAN: Wide Area Network. A linked network of remote computers or LANs. Usually owned by the same organization.

Web Browser: An application program used to access HTML files. It interprets the HTML file and presents the file in a graphical format. Examples include Netscape Navigator and MS Internet Explorer.

WEP: *Wired Equivalent Privacy*. A security protocol designed to provide a wireless local area network the same level of privacy that is expected from a wired LAN, through encryption and authentication techniques.

WWW: *Worldwide Web*. A slang term for the browse-able Internet, referring to the global, non-linear characteristics of the Internet. Users can access websites around the world through the existence of millions of linked web pages.

Asanté FriendlyNET Internet Router with Firewall

Appendix D. Warranty and Regulatory Notices

D.1 2-Year Limited Warranty

Subject to the limitations and exclusions below, Asanté warrants to the original end user purchaser that the covered products will be free from defects in title, materials and manufacturing workmanship for a period of two years from the date of purchase. This warranty excludes fans, power supplies, non-integrated software and accessories. Asanté warrants that the fans and power supplies will be free from defects in title, materials and manufacturing workmanship for two years from date of purchase. Asanté warrants that non-integrated software included with its products will be free from defects in title, materials, and workmanship for a period of 90 days from date of purchase, and the Company will support such software for the purpose for which it was intended for a period of 90 days from the date of purchase. This warranty expressly excludes problems arising due to compatibility with other vendors products, or future compatibility due to third party software or driver updates.

To take advantage of this warranty, you must contact Asanté for a return materials authorization (RMA) number. The RMA number must be clearly written on the outside of the returned package. Product must be sent to Asanté postage paid. In the event of a defect, Asanté will repair or replace defective product or components with new, refurbished or equivalent product or components as deemed appropriate by Asanté. The foregoing is your sole remedy, and Asanté's only obligation, with respect to any defect or non-conformity. Asanté makes no warranty with respect to accessories (including but not limited to cables, brackets and fasteners) included with the covered product, nor to any discontinued product, i.e., product purchased more than thirty days after Asanté has removed such product from its price list or discontinued shipments of such product.

This warranty is exclusive and is limited to the original end user purchaser only. This warranty shall not apply to secondhand products or to products that have been subjected to abuse, misuse, abnormal electrical or environmental conditions, or any condition other than what can be considered normal use.

ASANTÉ MAKES NO OTHER WARRANTIES, EXPRESS, IMPLIED OR OTHERWISE, REGARDING THE ASANTÉ PRODUCTS, EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ALL WARRANTIES OR CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. ASANTÉ'S LIABILITY ARISING FROM OR RELATING TO THE PURCHASE, USE OR INABILITY TO USE THE PRODUCTS IS LIMITED TO A REFUND OF THE PURCHASE PRICE PAID. IN NO EVENT WILL ASANTÉ BE LIABLE FOR INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES FOR THE BREACH OF ANY EXPRESS OR

IMPLIED WARRANTY, INCLUDING ECONOMIC LOSS, DAMAGE TO PROP-ERTY AND, TO THE EXTENT PERMITTED BY LAW, DAMAGES FOR PER-SONAL INJURY, HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY (INCLUDING NEGLI-GENCE). THESE LIMITATIONS SHALL APPLY EVEN IF ASANTE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR IF THIS WARRANTY IS FOUND TO FAIL OF ITS ESSENTIAL PURPOSE.

Some jurisdictions do not allow the exclusion or limitation of incidental or conse-quential damages or limitations on how long an implied warranty lasts, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may have other rights, which vary from jurisdiction to jurisdiction.

D.2 FCC Compliance Statement

This hardware device complies with Part 15 of the FCC Rules. Operation is sub-ject to the following two conditions: (1) this device may not cause harmful inter-ference, and (2) this device must accept any interference received, including interference that may cause undesired operation. This equipment has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

If you suspect this equipment is causing interference, turn your unit on and off while your radio or TV is showing interference. If the interference disappears when you turn the unit off and reappears when you turn the unit on, something in the unit is causing interference. You can try to correct the interference by one or more of the following measures: (1) reorient or relocate the receiving antenna; (2) increase the separation between the equipment and the receiver; (3) connect the equipment to an outlet on a circuit different from that to which the receiver is connected; (4) consult the place of purchase or an experienced radio/television technician for additional suggestions. Any changes or modifications not ex-pressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

D.3 Safety Advisory

1. The FriendlyNET router should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
2. Do not allow anything to rest on the power cord or where persons will walk on the cord.
3. Never push objects of any kind into the router through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.
4. Do not attempt to service the router yourself, as opening or removing covers may expose you to dangerous voltage points or other risks. Refer all servicing to service personnel.

D.4 CE Declaration of Conformity

This equipment complies with the requirements relating to electromagnetic compatibility, EN 55022/A1 Class B, and EN 50082-1. This meets the essential protection requirements of the European Council Directive 89/336/EEC on the approximation of the laws of the member states relation to electromagnetic compatibility.
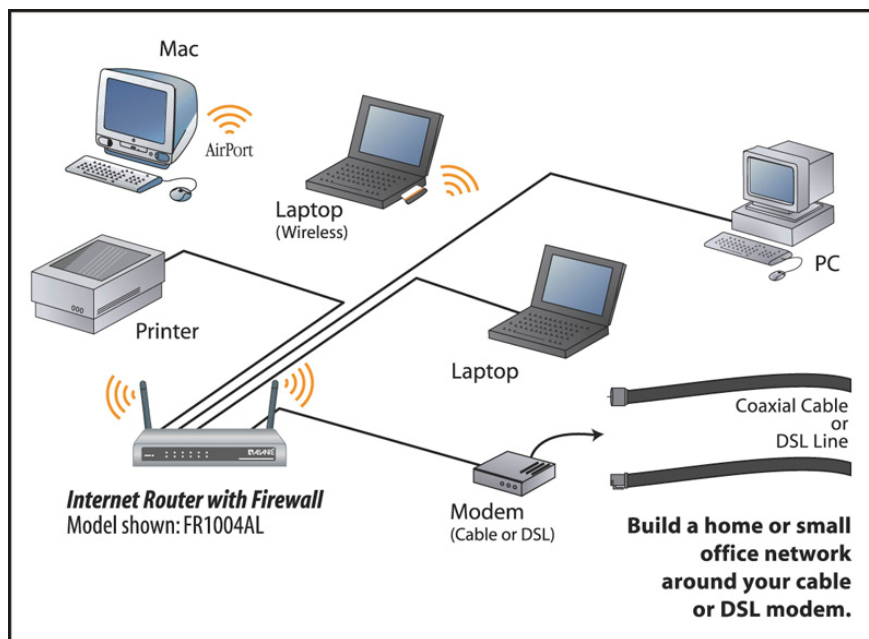
Typical network configuration using the FR1004AL router to share the Internet (via cable or DSL modem) with other computers on the local area network (LAN).

Appendix E. Online Warranty Registration and Card

Before you contact Asanté's technical support, please register your switch online at www.asante.com/support/registration.html or use the following printed card. By doing so, you'll be entitled to special offers, up-to-date information and important product bulletins.

ASANTÉ

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL   PERMIT NO. 4195   SAN JOSE CA

POSTAGE WILL BE PAID BY ADDRESSEE

REGISTRATION CARDS
ASANTE TECHNOLOGIES INC
821 FOX LANE
SAN JOSE CA 95131-9882

Name

Title

Company

Address 1

Address 2

City

State

Zip/Postal

Country

Phone

Fax

Email

Date of purchase

Asante Part Number

Product Serial Number

Please seal with tape, not staple or paperclip

1) What is your organization's primary business?

☐ Advertising Agency/ Public Relations
☐ CAD/CAM
☐ Graphic Arts Services
☐ Multimedia/Video
☐ Sales
☐ Finance
☐ College/University
☐ Higher Education
☐ K-12
☐ Manufacturing
☐ Medical/Dental
☐ Printers
☐ Prepress
☐ Publishing
☐ Transportation
☐ Corporate/In-plant, Non-commercial In-house Graphic Services
☐ Other _____

2) My primary job function is (Check only one):

☐ Business Management (President, Owner, VP, etc.)
☐ Communications/ Publishing Management
☐ Educational Management
☐ Management Information Systems (MIS)
☐ Graphic Arts/ Design Management
☐ Production Management
☐ Department Supervision/ Management

3) What is your influence on purchasing decisions?

☐ Authority to evaluate and purchase
☐ Evaluate and recommend

4) Have you previously purchased an Asanté product?

☐ Yes
☐ No

If yes, which product?
_____

5) Where did you purchase the product?

☐ Reseller
☐ Direct from Asanté
☐ Distributor
☐ Mail Order
☐ Web
☐ Other

6) Types of workstation operating systems:

☐ Mac OS
☐ Windows 95/98
☐ Windows® NT/2000
☐ Linux
☐ UNIX
☐ MS DOS
☐ Solaris
☐ Other _____

7) Number of nodes on your network:

☐ 2-10
☐ 10-50
☐ 50-100
☐ 100-500
☐ 500+

8) Type of network:

☐ LocalTalk
☐ Ethernet
☐ Fast Ethernet
☐ Gigabit Ethernet
☐ FDDI
☐ ATM

9) Type of network operating systems:

☐ Novell NetWare
☐ Microsoft NT/2000
☐ AppleTalk/MacLAN Connect
☐ AppleShare
☐ UNIX/Linux

10) Types of network management software:

☐ IntraSpection
☐ AsantéView
☐ SunNet Manager
☐ IBM NetView
☐ Optivity
☐ HP OpenView
☐ Other

ASANTÉ

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Status Indicators

Label	Description
Power	FR1004: On when the router has power
Status	Blinks during power on self-test
Link/Activity	On with valid network connection; blinks when there is network activity
100 Mbps	On for 1000 Mbps (Fast Ethernet); off for 10 Mbps
Printer	FR1004AL: On when print server is active
Wireless	FR1004AL: Blinks rapidly when there is wireless network activity

Ports

Ports	Connection	Specification
1, 2, 3, 4	To 10/100 Fast Ethernet ports for your computers (LAN)	RJ-45, 10/100 Fast Ethernet with Auto-Uplink
Internet	To your cable/DSL modem	RJ-45, 10/100 Fast Ethernet with Auto-Uplink
Printer	FR1004AL: To your printer	25-pin D-type parallel, standard parallel (unidirectional)
5 VDC	To the power module (included)	5 VDC, center is positive polarity

*To reset the router to factory defaults. Locate the **reset** button on the router. Turn off the power to the router. Using a pen, hold in the reset button and turn on the power to the router. In a few minutes, the router's status indicators will stop flashing and the default factory settings will be loaded.*

06-00675-00, Rev. A